

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 10-142773

(43)Date of publication of application : 29.05.1998

(51)Int.Cl.

G03F 1/14  
B65D 85/86  
H01L 21/027

(21)Application number : 08-315458

(71)Applicant : YUUKOU JUSHI KK

(22)Date of filing : 12.11.1996

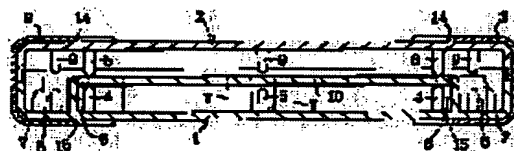
(72)Inventor : HAMADA TOSHIYUKI

## (54) HOUSING CASE FOR SUBSTRATE OF PHOTOMASK AND THE LIKE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a case for housing of substrates of photomasks, etc., which is capable of protecting the substrates against damage and contamination during transportation or at the time of storage and facilitates molding and washing.

**SOLUTION:** The inside base of a case body 1 is integrally provided with supporting projections 4, 5 which allow the imposition of the substrates 10 (11) of the photomasks, etc., by bringing their peak ends into direct contact with the rear surfaces of the ends of the substrates 10 (11) and enclosing pieces 6, 7 which prohibit the movement in the transverse direction of the substrates 10 (11) by bringing their inside surfaces into contact with the peripheral edges of the substrates 10 (11) in the contour positions of the substrates 10 (11). The inside top surface of a cap 2 is integrally provided with retaining projections 8, 9 which prohibit the vertical oscillation by bringing the bottom ends into direct contact with the front surfaces of the substrates 10 (11) and holding the substrates 10 (11) together with the supporting projections 4, 5 in the respective positions facing the supporting projections 4, 5 of the case body 1. The case body 1 and the cap 2 are molded of plastic having the hardness lower than the hardness of the substrates 10 (11) of the photomasks, etc.



## LEGAL STATUS

[Date of request for examination]

03.09.1998

[Date of sending the examiner's decision of rejection] 16.05.2000

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 3218338

[Date of registration] 10.08.2001

[Number of appeal against examiner's decision of rejection] 2000-09073

[Date of requesting appeal against examiner's decision of rejection] 16.06.2000

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

**\* NOTICES \***

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

**CLAIMS**

---

**[Claim(s)]**

[Claim 1] It has the case body 1 and the lid fixed band 3 attached in the periphery of the corner to the case body 1 where a lid 2 is put on the lid 2 which can be detached and attached freely, and the case body 1. The support projections 4 and 5 which the apex section is contacted soon and enable installation of these substrates 10 and 11 of it on the inner base of the case body 1 on the inferior surface of tongue of the edge of the substrates 10 and 11, such as a photo mask, While forming in one the pieces 6 and 7 of an enclosure which the inside is contacted in the outline location of these substrates 10 and 11 in the periphery of substrates 10 and 11, and prevent migration of the longitudinal direction of these substrates 10 and 11 The presser-foot projections 8 and 9 which the lower limit section is soon contacted in the support projections 4 and 5 of the case body 1 and the location which counters in the inner top panel of a lid 2 on the top face of the above-mentioned substrates 10 and 11, respectively, and prevent the shake of the vertical direction on both sides of substrates 10 and 11 with the support projections 4 and 5 are formed in one. The receipt case of substrates, such as a photo mask characterized by fabricating the case body 1 and lid 2 with plastics with a degree of hardness smaller than the substrates 10 and 11, such as a photo mask.

[Claim 2] Surround with the support projection 4, allot a piece 6 near the four corners in the inner base of the case body 1, respectively, surround with another support projection 5, and a piece 7 is allotted to the abbreviation mid-position near the neighborhood of the case body 1, respectively. The receipt case of substrates, such as a photo mask according to claim 1 which surrounds with the support projection 5 of another side, and held the substrates 11, such as a photo mask of another different predetermined size, by the piece 7 while surrounding with one support projection 4 and holding the substrates 10, such as a photo mask of predetermined size, by the piece 6.

[Claim 3] The receipt case of substrates, such as a photo mask according to claim 1 or 2 pressed down with one support projection 4, pressed down with the support projection 5 of another side compared with the projection 8, pressed down the substrates 11, such as another large photo mask of board thickness, with the support projection 5 of another side compared with the substrates 10, such as a photo mask which makes the back of projection 9 somewhat respectively low, presses down with one support projection 4, and is inserted by projection 8, and carried out that fastening was possible by the projection 9.

[Claim 4] The receipt case of substrates, such as a photo mask according to claim 1, 2, or 3 the rim of the corner of the substrates 10 and 11, such as a photo mask, was made to contact the inside considering the pieces 6 and 7 of an enclosure prepared in the case body 1 as the shape of abbreviation Ha's character.

[Claim 5] The receipt case of substrates, such as a photo mask according to claim 1, 2, 3, or 4 which formed the heights 12 and 13 stopped in contact with the rim of the lid fixed band 3 attached in the periphery of the corner where a lid 2 is put on the case body 1 respectively in one near the corner in a top panel outside the lid 2 near the corner in the outsole side of the case body 1.

[Claim 6] The receipt case of substrates, such as a photo mask according to claim 1, 2, 3, 4, or 5 which fabricated the case body 1 and the lid 2 using electroconductive plastics.

---

[Translation done.]

**\* NOTICES \***

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

**DETAILED DESCRIPTION**

---

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the case which contains a photo mask (a photo mask with a pellicle is included), and substrates, such as photo-mask BURANKUSU.

[0002]

[Description of the Prior Art] When carrying or keeping substrates, such as a photo mask, it is damaged, or an extreme care is required so that it may not pollute. Therefore, the case of the dedication which can contain substrates, such as a photo mask, safely is devised. For example, the case which contains two or more substrates to longitude is indicated by JP,59-74726,U and JP,6-87967,A. Since such a case must be held so that no substrates may be contacted although receipt effectiveness is good, a internal structure is complicated and there is a problem that shaping and washing are troublesome. Moreover, there is also a problem of being hard to take out each substrate.

[0003] The above-mentioned problem is solvable by containing a substrate in a case by the horizontal position independently. As such a case, the case indicated by JP,6-64678,A, for example is well-known. In order to hold this case on both sides of a substrate, the projection was prepared so that a top cover and a lower lid might be faced, and the cap which has buffer nature so that a substrate may not be damaged to that projection is put. However, when a cap is put on the projection whose substrate is pinched like this case, the component contained in that ingredient may have a bad influence to a substrate with the ingredient of that cap. Moreover, it is also troublesome to remove the cap, among those to wash a pore.

[0004]

[Problem(s) to be Solved by the Invention] This invention contains substrates, such as a photo mask, it can be damaged at the time of the inside of conveyance, or storage, or it can be protected so that it may not pollute, and moreover, shaping and washing are easy for it, and it offers a technical problem cases for substrate receipt, such as a photo mask of dedication without \*\* which has a bad influence on substrates, such as a photo mask to contain.

[0005]

[Means for Solving the Problem] The above-mentioned technical problem receives this invention 1, i.e., a case body, and the case body 1. The lid 2 which can be detached and attached freely, It has the lid fixed band 3 attached in the periphery of the corner where a lid 2 is put on the case body 1. The support projections 4 and 5 which the apex section is contacted soon and enable installation of these substrates 10 and 11 of it on the inner base of the case body 1 on the inferior surface of tongue of the edge of the substrates 10 and 11, such as a photo mask, While forming in one the pieces 6 and 7 of an enclosure which the inside is contacted in the outline location of these substrates 10 and 11 in the periphery of substrates 10 and 11, and prevent migration of the longitudinal direction of these substrates 10 and 11 The presser-foot projections 8 and 9 which the lower limit section is soon contacted in the support projections 4 and 5 of the case body 1 and the location which counters in the inner top panel of a lid 2 on the top face of the above-mentioned substrates 10 and 11, respectively, and prevent the shake of the vertical direction on both sides of substrates 10 and 11 with the support projections 4 and 5 are formed in one. It is solvable in the receipt case of substrates, such as a photo mask characterized by \*\*\*\*\* which fabricated the case body 1 and lid 2 with plastics with a degree of hardness smaller than the substrates 10 and 11, such as a photo mask.

[0006] In addition, the receipt case of substrates, such as the above-mentioned photo mask Surround with the support projection 4, allot a piece 6 near the four corners in the inner base of the case body 1, respectively, surround with another support projection 5, and a piece 7 is allotted to the abbreviation mid-position near the neighborhood of the case body 1, respectively. While surrounding with one support projection 4 and holding the substrates 10, such as a photo mask of predetermined size, by the piece 6, it is desirable to consider as a configuration which surrounds with the support projection 5 of another side, and holds the substrates 11, such as a photo mask of another different predetermined size, by the piece 7.

[0007] Moreover, it is desirable in pressing down the receipt case of substrates, such as the above-mentioned photo mask, with one support projection 4, pressing down with the support projection 5 of another side compared with projection 8, pressing down the substrates 11, such as another large photo mask of board thickness, with the support projection 5 of another side compared with the substrates 10, such as a photo mask which makes the back of projection 9 somewhat respectively low, presses down with one support projection 4, and is inserted by projection 8, and carrying out that fastening is possible by projection 9.

[0008] Moreover, as for the receipt case of substrates, such as the above-mentioned photo mask, it is desirable to make the pieces 6 and 7 of an enclosure prepared in the case body 1 as the shape of abbreviation Ha's character as [ contact / in the rim of the corner of the substrates 10 and 11, such as a photo mask, / the inside ].

[0009] Moreover, as for the receipt case of substrates, such as the above-mentioned photo mask, it is desirable to prepare respectively in one near the corner in a top panel outside the lid 2 near [ in / for the heights 12 and 13 stopped in contact with the rim of the lid fixed band 3 attached in the periphery of the corner where a lid 2 is put on the case body 1 / the outsole side of the case body 1 ] the corner.

[0010] Moreover, as for the receipt case of substrates, such as the above-mentioned photo mask, it is desirable to fabricate the case body 1 and a lid 2 using electroconductive plastics.

[0011]

[Example] Hereafter, the example of this invention shown in drawing is explained. First, drawing 1 shows the condition before putting a lid 2 on the case body 1. The case body 1 has formed the respectively different support projection 5 in the mid-position of two support projections 4 which they-adjoin, i.e., the abbreviation mid-position near the neighborhood of the case body 1, in one while forming the support projection 4 in one near the four corners in an inner base, respectively. Namely, although the support projections 4 and 5 are formed in eight places in all, as for the support projection 5, the back is low for a while rather than the support projection 4. Moreover, each support projection 5 is located outside for a while rather than the line top which connects two adjoining support projections 4. Near the outside of these support projections 4 and 5, the pieces 6 and 7 of an enclosure of the shape of abbreviation Ha's character are provided in [ it is same and ] one so that these support projections 4 and 5 may be surrounded.

[0012] On the other hand, while forming the presser-foot projection 8 in four support projections 4 of the case body 1, and the location which counters in one in the inner top panel of a lid 2, respectively, the presser-foot projection 9 is formed also in the support projection 5 prepared in other four places of the case body 1, and the location which counters in one, respectively. In addition, as for one presser-foot projection 9, the back is low for a while rather than the presser-foot projection 8 of another side.

[0013] By the piece 6, as it surrounds on the case body 1 with the support projection 4 prepared in four near the corner and is shown in drawing 2, the substrates 10, such as a photo mask of square predetermined size, can be held by the product made from quartz glass. That is, while laying four corners of a substrate 10, such as a photo mask, in the apex section of four support projections 4 soon, it can hold by contacting the rim of four corners of a substrate 10, such as a photo mask, to the inside of four pieces 6 of an enclosure, respectively.

[0014] As similarly it surrounds with the support projection 5 prepared in four another places, respectively and a piece 7 shows to drawing 3, the substrates 11, such as a photo mask of another predetermined size, can be held after 45 degrees has rotated to the substrates 10, such as the above-mentioned photo mask. In addition, the substrates 11, such as this photo mask, have size somewhat

smaller than the substrates 10, such as the above-mentioned photo mask, and board thickness is somewhat large. Namely, this case body 1 can hold now the substrates 10 and 11, such as two kinds of photo masks with which size differs from board thickness.

[0015] Since the pieces 6 and 7 of an enclosure are presenting the shape of abbreviation Ha's character when containing the substrates 10 and 11, such as a photo mask, on the case body 1, the alignment of the corner of the substrates 10 and 11, such as a photo mask, is easy.

[0016] If a lid 2 is put to the case body 1 which contained the substrates 10, such as a photo mask, or 11, the presser-foot projection 8 or 9 will contact the substrates 10, such as a photo mask, or the top face of 11. That is, the substrates 10, such as a photo mask, or 11 presses down with the support projection 4 or 5, and vertical both sides are inserted into it by projection 8 or 9, and it is fixed.

[0017] Since lateral migration is prevented since a periphery edge is regulated by the above-mentioned pieces 6 and 7 of an enclosure, and the substrates 10, such as a photo mask, or 11 has the shake of the vertical direction suppressed by the support projection 4 or 5, and the presser-foot projection 8 or 9, it can prevent damage by the vibration at the time during conveyance of storage.

[0018] In addition, since the suspended particles of dust in air etc. will be adsorbed and it will become easy to pollute, if a discharge phenomenon is produced between a case and substrates, such as a photo mask, there is a possibility that the pattern of a photo mask may be destroyed, when a case accumulates static electricity at the time during conveyance of storage, and a case is charged, in order to prevent this, as for the case body 1 and a lid 2, fabricating with electroconductive plastics is desirable. It is usable in the resin marketed by the trade name of Bayh John (Kureha Chemical Industry make) as electroconductive plastics, for example.

[0019] Moreover, since it presses down with the support projection 4 or 5 to the substrates 10, such as a photo mask, or vertical both sides of 11 and projection 8 or 9 contacts soon, it is desirable to fabricate the case body 1 and a lid 2 with plastics with a degree of hardness smaller than the substrates 10 and 11, such as a photo mask, so that the substrates 10, such as a photo mask, or 11 may not be damaged.

[0020] In four near [ in a top panel ] the corner, the wart-like heights 12 and 13 are formed, respectively outside 4 near [ in the outsole side of the case body 1 ] the corner, and a lid 2. Where a lid 2 is put on the case body 1 which contained the substrates 10 and 11, such as a photo mask, as shown in drawing 4, the lid fixed band 3 can be attached in the four corners. The lid fixed band 3 presents cyclic, it is a product made from plastics, it encloses the periphery of a corner, contacting a top panel, the side face of the case body 1 of the both sides of a corner, and a lid 2, and the outsole side of the case body 1 outside a lid 2, and it can press down and it can carry out the stop of the lid 2 so that it may not dissociate from the case body 1. In addition, in case the lid fixed band 3 is attached in a corner, the lid fixed band 3 will overcome heights 12 and 13 by elastic deformation, and heights 12 and 13 will stop in contact with the rim of the lid fixed band 3. The lid fixed band 3 falls out, and a stop is carried out, and it stops separating easily thereby.

[0021] moreover, some of each heights 13 in the top panel outside a lid 2 -- some of each heights 12 in an inside location and the outsole side of the case body 1 -- the guide projections 14 and 15 of the shape of L character for preventing the location gap at the time of accumulating a case up and down, respectively are formed in the inside location. The above-mentioned lid fixed band 3 contacts the common-law marriage to the guide projections 14 and 15 in the condition of having attached.

[0022]

[Effect of the Invention] The receipt case of substrates, such as a photo mask of this invention, is as above-mentioned, presses down vertical both sides of the substrates 10 and 11, such as a photo mask, and faces across them by projections 8 and 9 and the support projections 4 and 5. And the vertical direction and damage according [ can hold so that it may not move horizontally, and ] to the vibration at the time of the inside of conveyance or storage can be prevented for the substrates 10 and 11, such as a photo mask, by surrounding to the rim of the substrates 10 and 11, such as a photo mask, and contacting pieces 6 and 7. And since it presses down especially with the support projections 4 and 5 and projections 8 and 9 contact the point to the substrates 10 and 11, such as a photo mask, soon, without putting a cap like the above-mentioned well-known example, it is avoidable that the substrates 10 and 11, such as a photo mask, receive a bad influence by the component contained in the ingredient of a cap. In addition, even if it does not use the cap for a

buffer, damage on the substrates 10 and 11, such as a photo mask, is avoidable by making the presser-foot projections 8 and 9 and the support projections 4 and 5 into the product made from plastics with a degree of hardness smaller than the glass which is the ingredients of substrates 10 and 11, such as a photo mask.

[0023] Moreover, the substrates 10 and 11, such as two kinds of photo masks with which sizes differ, can be held by [ according to claim 2 ] constituting like.

[0024] Moreover, the substrates 10 and 11, such as two kinds of photo masks with which board thickness differs, can be held by [ according to claim 3 ] constituting like.

[0025] Moreover, when containing the substrates 10 and 11, such as a photo mask, on the case body 1 by [ according to claim 4 ] constituting like, the alignment of the corner of the substrates 10 and 11, such as a photo mask, is easy.

[0026] Moreover, when the lid 2 was put on the case body 1, and the lid 2 is pressed down with the lid fixed band 3 and carries out a stop by [ according to claim 5 ] constituting like Since the lid fixed band 3 separates easily and a lid 2 does not open unwillingly when the heights 12 and 13 prepared especially in the case body 1 and a lid 2 stop in the lid fixed band 3 and fall out and carry out a stop to it Term \*\*\*\*\* can do perfection about the pollution control of the substrates 10 and 11, such as a photo mask contained inside the case.

[0027] Moreover, the accident which produces a discharge phenomenon between a case and substrates, such as a photo mask, and by which the pattern of a photo mask is destroyed, and the evil in which a case adsorbs the suspended particles of dust in air etc. by electrification, and it pollutes can be prevented by [ according to claim 6 ] constituting like.

---

[Translation done.]

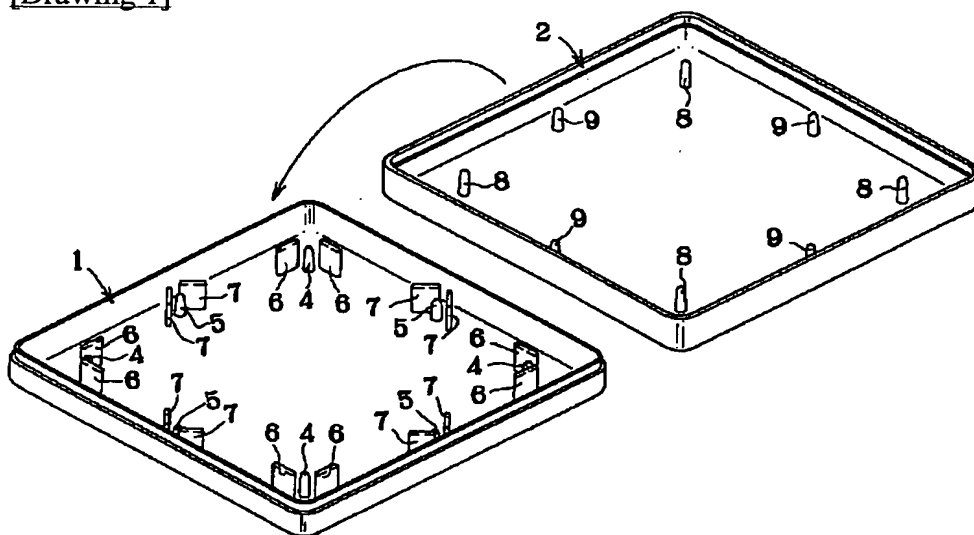
## \* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

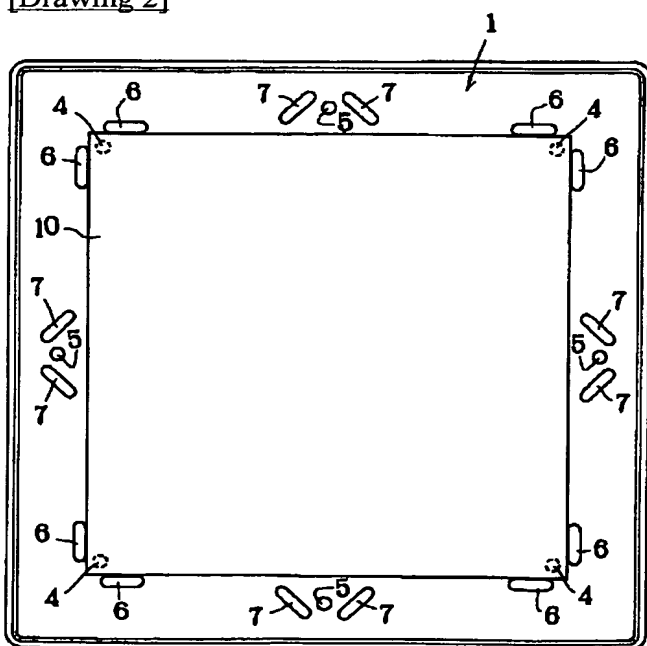
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DRAWINGS

[Drawing 1]

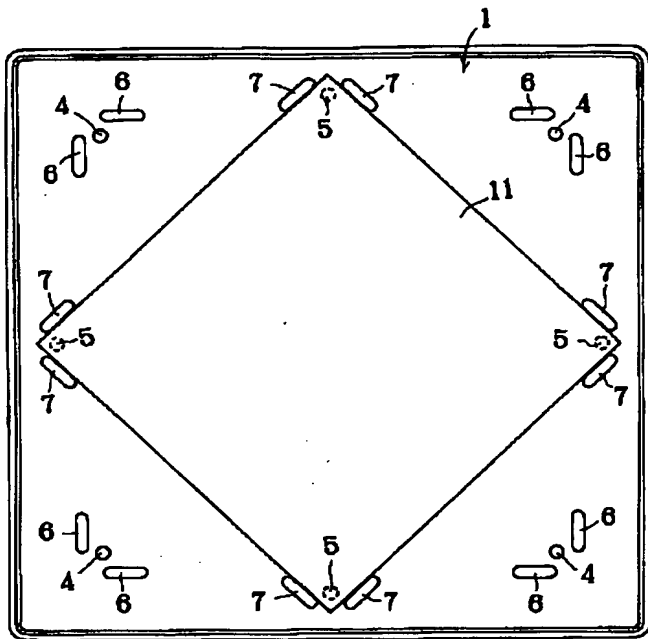


[Drawing 2]

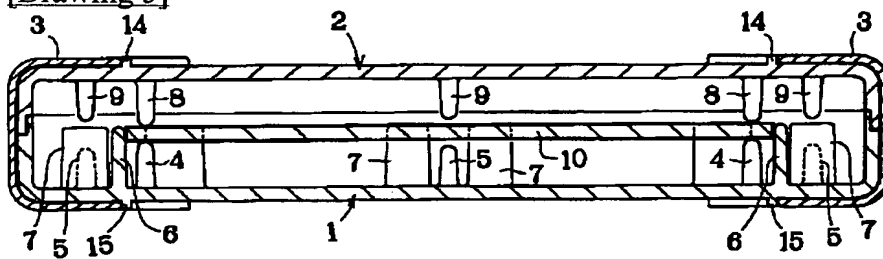


[Drawing 3]

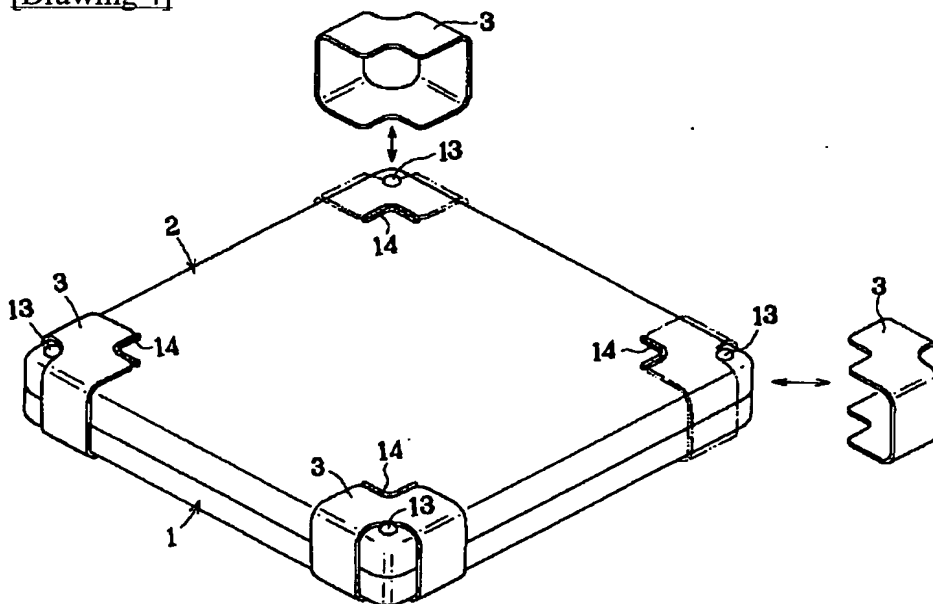




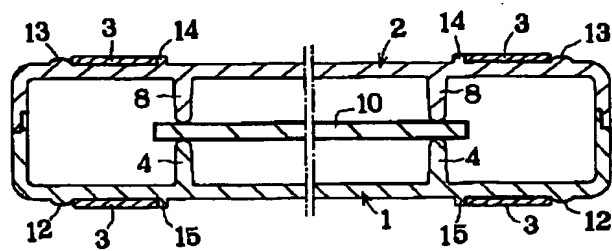
[Drawing 5]



[Drawing 4]



[Drawing 6]



[Translation done.]

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平10-142773

(43) 公開日 平成10年(1998) 5月29日

(51) Int. CL<sup>8</sup>

識別記号

F I

G 0 3 F 1/14

G 0 3 F 1/14

M

B 6 5 D 85/86

B 6 5 D 85/38

R

H 0 1 L 21/027

H 0 1 L 21/30

5 0 3 D

審査請求 未請求 請求項の数 6 F D (全 6 項)

(21) 出願番号 特願平9-315458

(22) 出願日 平成8年(1996)11月12日

(71) 出願人 396025300

有恒樹脂株式会社

東京都品川区南大井6丁目6番8号

(72) 発明者 濱田 敏行

東京都品川区南大井6丁目6番8号 有恒

樹脂株式会社内

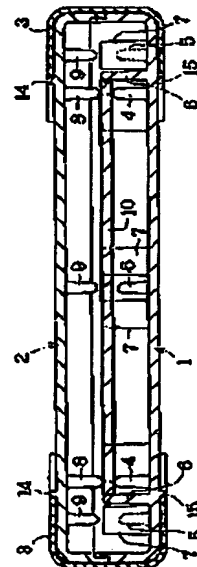
(74) 代理人 弁理士 杉山 泰三

(54) 【発明の名称】 フォトマスク等基板の収納ケース

(57) 【要約】 (修正有)

【課題】 運搬中や保管時に損傷したり汚染しないように保護することができ、しかも成形や洗浄が容易なフォトマスク等基板収納用ケースを提供する。

【解決手段】 ケース本体1の内底面にフォトマスク等基板10、11の端部の下面にその頂端部を直に接触させて同基板10、11を載置可能とする支持突起4、5と、同基板10、11の外縁位置にその内面を基板10、11の周縁に接触させて同基板10、11の横方向の移動を阻止する囲み片6、7とを一体的に設けるとともに、蓋体2の内天面においてケース本体1の支持突起4、5と対向する位置にそれぞれ上記基板10、11の上面にその下端部を直に接触させて支持突起4、5と共に基板10、11を挟んで上下方向の揺れを阻止する押え突起8、9を一体的に設け、そのケース本体1と蓋体2をフォトマスク等基板10、11よりも硬度の小さいプラスチックにより成形した。



(2)

特開平10-142773

1

2

## 【特許請求の範囲】

【請求項1】 ケース本体1と、ケース本体1に対し着脱自在な蓋体2と、ケース本体1に蓋体2を被せた状態でその角部の外周に嵌着する蓋固定バンド3とを具え、そのケース本体1の内底面にフォトマスク等基板10、11の端部の下面にその頂端部を直に接触させて同基板10、11を載置可能とする支持突起4、5と、同基板10、11の外郭位置にその内面を基板10、11の周縁に接触させて同基板10、11の横方向の移動を阻止する囲み片6、7とを一体的に設けるとともに、蓋体2の内天面においてケース本体1の支持突起4、5と対向する位置にそれぞれ上記基板10、11の上面にその下

端部を直に接触させて支持突起4、5と共に基板10、11を挟んで上下方向の揺れを阻止する押え突起8、9を一体的に設け、そのケース本体1と蓋体2をフォトマスク等基板10、11よりも硬度の小さいプラスチックにより成形したことを特徴とするフォトマスク等基板の収納ケース。

【請求項2】 支持突起4と囲み片6をそれぞれケース本体1の内底面における4箇所の隅角部近傍に配し、別の支持突起5と囲み片7をそれぞれケース本体1の四辺近傍の略中間位置に配して、一方の支持突起4と囲み片6により所定サイズのフォトマスク等基板10を保持するとともに、他方の支持突起5と囲み片7により別の異なる所定サイズのフォトマスク等基板11を保持するようにした請求項1記載のフォトマスク等基板の収納ケース。

【請求項3】 一方の支持突起4と押え突起8に比べ他方の支持突起5と押え突起9の背をそれぞれ少し低くして、一方の支持突起4と押え突起8により挟むフォトマスク等基板10に比べて板厚の大きい別のフォトマスク等基板11を他方の支持突起5と押え突起9により挟着可能とした請求項1または2記載のフォトマスク等基板の収納ケース。

【請求項4】 ケース本体1に設ける囲み片6、7を略ハの字状として、その内面にフォトマスク等基板10、11の角部の外縁を当接するようにした請求項1、2または3記載のフォトマスク等基板の収納ケース。

【請求項5】 ケース本体1に蓋体2を被せた状態でその角部の外周に嵌着する蓋固定バンド3の外縁に当接して係止する凸部12、13をケース本体1の外底面における角部近傍と、蓋体2の外天面における角部近傍にそれぞれ一体的に設けた請求項1、2、3または4記載のフォトマスク等基板の収納ケース。

【請求項6】 ケース本体1と蓋体2を導電性プラスチックを用いて成形した請求項1、2、3、4または5記載のフォトマスク等基板の収納ケース。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明は、フォトマスク（ベ

リクル付フォトマスクを含む）や、フォトマスクブランクス等の基板を収納するケースに関する。

【0002】

【従来の技術】 フォトマスク等の基板を運搬又は保管する場合は、損傷したり汚染しないように厳重な注意を要する。そのためフォトマスク等基板を安全に収納できる専用のケースが考案されている。例えば、実開昭59-74726号公報や、特開平6-87967号公報には、複数枚の基板を縦向きに収納するケースが開示されている。このようなケースは、収納効率は良いが、すべての基板を接触しないように保持しなければならないので、内部構造が複雑化し、成形や洗浄が面倒であるという問題がある。また、各基板を取り出しにくいという問題もある。

【0003】 上記の問題は、基板を単独で横向き姿勢でケースに収納することにより解決可能である。このようなケースとしては、例えば、特開平6-64678号公報に開示されたケースが公知である。このケースは、基板を挟んで保持するために、上蓋と下蓋に相対するように突起を設け、その突起に基板を備付けないように緩衝性のあるキャップを被せている。しかしながら、このケースのように、基板を挟む突起にキャップを被せると、そのキャップの材料によって、その材料に含まれる成分が基板に対し悪影響を与えることがある。また、そのキャップを外してその内孔部を洗浄するのが面倒でもある。

【0004】

【発明が解決しようとする課題】 本発明は、フォトマスク等基板を収納して、運搬中や保管時に損傷したり汚染しないように保護することができ、しかも成形や洗浄が容易で、また、収納するフォトマスク等基板に悪影響を与える弊がない専用のフォトマスク等基板収納用ケースの提供を課題とする。

【0005】

【課題を解決するための手段】 上記の課題は本発明によって、すなわち、ケース本体1と、ケース本体1に対し着脱自在な蓋体2と、ケース本体1に蓋体2を被せた状態でその角部の外周に嵌着する蓋固定バンド3とを具え、そのケース本体1の内底面にフォトマスク等基板10、11の端部の下面にその頂端部を直に接触させて同基板10、11を載置可能とする支持突起4、5と、同基板10、11の外郭位置にその内面を基板10、11の周縁に接触させて同基板10、11の横方向の移動を阻止する囲み片6、7とを一体的に設けるとともに、蓋体2の内天面においてケース本体1の支持突起4、5と対向する位置にそれぞれ上記基板10、11の上面にその下端部を直に接触させて支持突起4、5と共に基板10、11を挟んで上下方向の揺れを阻止する押え突起8、9を一体的に設け、そのケース本体1と蓋体2をフォトマスク等基板10、11よりも硬度の小さいプラスチック

(3)

特開平10-142773

3

チックにより成形したことを特徴とするフォトマスク等基板の収納ケースによって解決することができる。

【0006】なお、上記のフォトマスク等基板の収納ケースは、支持突起4と囲み片6をそれぞれケース本体1の内底面における4箇所の隅角部近傍に配し、別の支持突起5と囲み片7をそれぞれケース本体1の四辺近傍の略中間位置に配して、一方の支持突起4と囲み片6により所定サイズのフォトマスク等基板10を保持するとともに、他方の支持突起5と囲み片7により別の異なる所定サイズのフォトマスク等基板11を保持するような構成とすることが好ましい。

【0007】また、上記のフォトマスク等基板の収納ケースは、一方の支持突起4と押え突起8に比べ他方の支持突起5と押え突起9の背をそれぞれ少し低くして、一方の支持突起4と押え突起8により挟むフォトマスク等基板10に比べて板厚の大きい別のフォトマスク等基板11を他方の支持突起5と押え突起9により挟着可能とすることが好ましい。

【0008】また、上記のフォトマスク等基板の収納ケースは、ケース本体1に設ける囲み片6、7を略ハの字状として、その内面にフォトマスク等基板10、11の角部の外縁を当接するようになすことが好ましい。

【0009】また、上記のフォトマスク等基板の収納ケースは、ケース本体1に蓋体2を被せた状態でその角部の外周に嵌着する蓋固定バンド3の外縁に当接して係止する凸部12、13をケース本体1の外底面における角部近傍と、蓋体2の外天面における角部近傍にそれぞれ一体的に設けるのが好ましい。

【0010】また、上記のフォトマスク等基板の収納ケースは、ケース本体1と蓋体2を導電性プラスチックを用いて成形するのが好ましい。

【0011】

【実施例】以下、図に示した本発明の実施例について説明する。まず、図1はケース本体1に蓋体2を被せる前の状態を示したものである。ケース本体1は内底面における4箇所の隅角部の近傍にそれぞれ支持突起4を一体的に設けるとともに、それら隣接する2箇所の支持突起4の中間位置、すなわちケース本体1の四辺近傍の略中間位置にもそれぞれ別の支持突起5を一体的に設けている。すなわち、全部で8箇所に支持突起4、5を設けているが、支持突起5は支持突起4よりも少し背が低くなっている。また、各支持突起5は隣接する2箇所の支持突起4を結ぶ線上よりも少し外側に位置している。これら支持突起4、5の外側近傍には、それら支持突起4、5を囲むように、略ハの字状の囲み片6、7を同じく一体的に設けている。

【0012】一方、蓋体2の内天面においてケース本体1の4箇所の支持突起4と対向する位置にそれぞれ押え突起8を一体的に設けるとともに、ケース本体1の他の4箇所に設けた支持突起5と対向する位置にもそれぞれ

4

押え突起9を一体的に設けている。なお、一方の押え突起9は他方の押え突起8よりも少し背が低くなっている。

【0013】ケース本体1には隅角部近傍の4箇所に設けた支持突起4と囲み片6とによって、図2に示すように、石英ガラス製で、正方形の所定サイズのフォトマスク等基板10を保持することができる。すなわち、4箇所の支持突起4の頂端部に直にフォトマスク等基板10の四箇所の角部を載置するとともに、4箇所の囲み片6の内面にそれぞれフォトマスク等基板10の4箇所の角部の外縁を接触させることにより保持することができる。

【0014】同様に、別の4箇所にそれぞれ設けた支持突起5と囲み片7とによって、図3に示すように、別の所定サイズのフォトマスク等基板11を、上記のフォトマスク等基板10に対して45°回転した状態で保持することができる。なお、このフォトマスク等基板11は上記のフォトマスク等基板10よりサイズが少し小さくて、板厚は少し大きくなっている。すなわち、このケース本体1はサイズと板厚が異なる2種類のフォトマスク等基板10、11を保持できるようになっている。

【0015】ケース本体1にフォトマスク等基板10、11を収納する場合、囲み片6、7が略ハの字状を呈しているため、フォトマスク等基板10、11の角部の位置合わせが容易である。

【0016】フォトマスク等基板10又は11を収納したケース本体1に対し蓋体2を被せると、押え突起8又は9がフォトマスク等基板10又は11の上面に接触する。すなわち、フォトマスク等基板10又は11は、支持突起4又は5と押え突起8又は9とにより上下両面を挟まれて固定される。

【0017】フォトマスク等基板10又は11は、上記の囲み片6、7により外周縁を規制されるので横方向の移動が阻止され、かつ、支持突起4又は5と、押え突起8又は9とにより上下方向の揺れを抑えられるので、運搬中又は保管時の振動による損傷を防止することができる。

【0018】なお、ケースが運搬中又は保管時に静電気を蓄積すると、ケースとフォトマスク等基板との間で放電現象を生じて、フォトマスクのパターンが破壊される恐れがあり、又、ケースが帯電すると空気中の浮遊塵等を吸着して汚染しやすくなるので、これを防止するために、ケース本体1と蓋体2は導電性プラスチックにより成形するのが好ましい。導電性プラスチックとしては、例えば、バイオン（興羽化学工業製）という商品名で市販されている樹脂を使用可能である。

【0019】また、フォトマスク等基板10又は11の上下両面に支持突起4又は5と押え突起8又は9が直に接触するので、フォトマスク等基板10又は11を傷付けないように、ケース本体1と蓋体2をフォトマスク等

(4)

特開平10-142773

5

6

基板10、11よりも硬度の小さいプラスチックにより成形するのが好ましい。

【0020】ケース本体1の外底面における角部近傍の4箇所と、蓋体2の外天面における角部近傍の4箇所には、それぞれ突起の凸部12、13を設けている。フォトマスク等基板10、11を収納したケース本体1に蓋体2を被せた状態で、その角部4箇所には、図4に示すように、蓋固定バンド3を嵌着することができる。蓋固定バンド3はプラスチック製で、輪状を呈し、蓋体2の外天面、角部の両側のケース本体1と蓋体2の側面、及びケース本体1の外底面に接触しながら角部の外周を取り囲み、蓋体2をケース本体1から分離しないように押え止めることができる。なお、蓋固定バンド3を角部に嵌着する際に、蓋固定バンド3が弾性変形により凸部12、13を乗り越えて、蓋固定バンド3の外縁に凸部12、13が当接して係止することになる。これにより蓋固定バンド3が抜け止めされて安易に外れなくなる。

【0021】また、蓋体2の外天面における各凸部13の少し内側位置と、ケース本体1の外底面における各凸部12の少し内側位置には、それぞれ、ケースを上下に積み重ねた場合の位置ずれを防止するためのL字状のガイド突起14、15を設けている。上記の蓋固定バンド3は嵌着した状態でその内縁をガイド突起14、15に接触させる。

【0022】

【発明の効果】本発明のフォトマスク等基板の収納ケースは上記の通りであり、フォトマスク等基板10、11の上下両面を押え突起8、9と支持突起4、5により挟み、かつフォトマスク等基板10、11の外縁に囲み片6、7を当接することによって、フォトマスク等基板10、11を上下方向かつ水平方向に動かないように保持することができる。運搬中や保管時の振動による損傷を防止することができる。そして、特に支持突起4、5と押え突起8、9は上記公知例のようにキャップを被せず直にその先端部をフォトマスク等基板10、11に接触させるので、キャップの材料に含まれる成分によってフォトマスク等基板10、11が悪影響を受けるのを避けることができる。なお緩衝用のキャップを用いなくとも、押え突起8、9や支持突起4、5をフォトマスク等基板10、11の材料であるガラスなどよりも硬度の小さいプラスチック製とすることによりフォトマスク等基板10、11の損傷を避けることができる。

【0023】また、請求項2記載のように構成することにより、サイズの異なる2種類のフォトマスク等基板10、11を保持することができる。

【0024】また、請求項3記載のように構成することにより、板厚の異なる2種類のフォトマスク等基板10、11を保持することができる。

【0025】また、請求項4記載のように構成することにより、ケース本体1にフォトマスク等基板10、11を収納する場合に、フォトマスク等基板10、11の角部の位置合わせが容易である。

【0026】また、請求項5記載のように構成することにより、ケース本体1に蓋体2を被せてその蓋体2を蓋固定バンド3により押え止めたときに、特にケース本体1と蓋体2に設けた凸部12、13が蓋固定バンド3に係止して抜け止めすることにより蓋固定バンド3が安易に外れて蓋体2が不意に開くことがないので、ケースの内部に収納したフォトマスク等基板10、11の汚染防止に関し完璧を期すことができる。

【0027】また、請求項6記載のように構成することにより、ケースとフォトマスク等基板との間で放電現象を生じてフォトマスクのパターンが破壊される事故や、ケースが帯電により空気中の浮遊塵等を吸引して汚染するという弊害を防止することができる。

【図面の簡単な説明】

【図1】空のケース本体と開いた状態の蓋体の斜視図である。

【図2】ケース本体に所定サイズの大きいフォトマスク等基板を収納した状態の平面図である。

【図3】ケース本体に所定サイズの小さいフォトマスク等基板を収納した状態の平面図である。

【図4】ケース本体に蓋体を被せ且つ蓋固定バンドを嵌着した状態の斜視図である。

【図5】大きいサイズのフォトマスク等基板を収納した状態においてケースの端部を側面に平行に切断した断面図である。

【図6】大きいサイズのフォトマスク等基板を収納した状態においてケースの中央部の対角線位置を切断した断面図である。

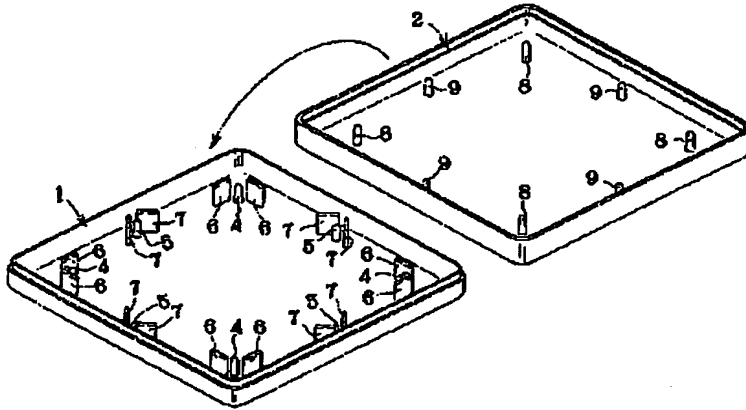
【符号の説明】

- 1 ケース本体
- 2 蓋体
- 3 蓋固定バンド
- 4、5 支持突起
- 6、7 囲み片
- 8、9 押え突起
- 10、11 フォトマスク等基板
- 12、13 凸部
- 14、15 ガイド突起

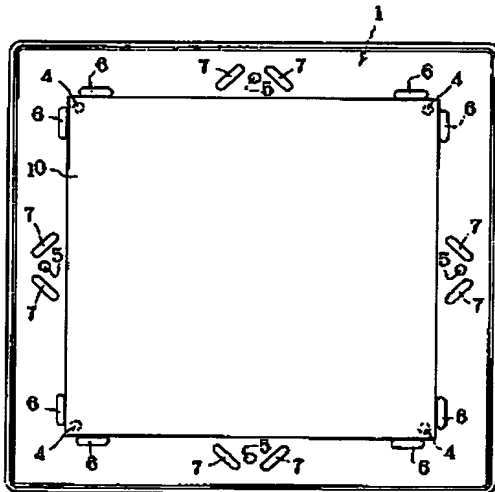
(5)

特開平10-142773

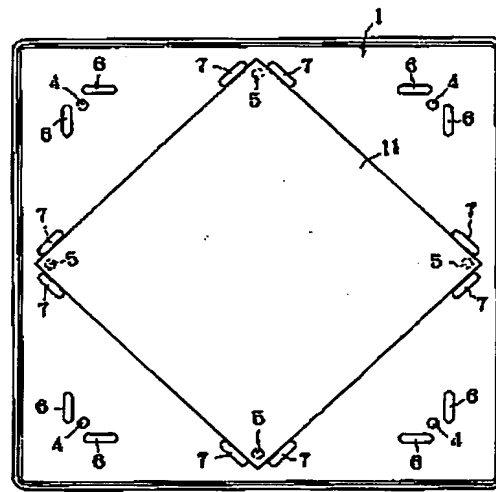
【図1】



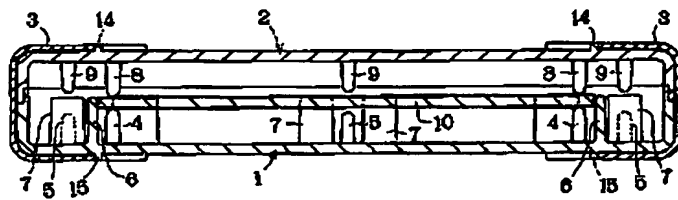
【図2】



【図3】



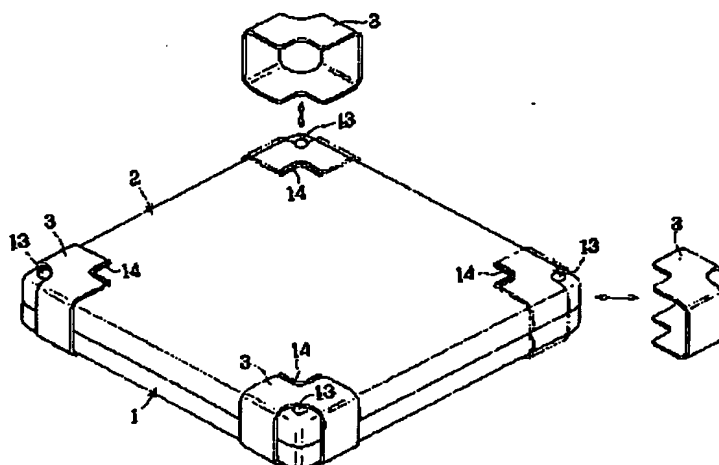
【図5】



(6)

特開平10-142773

【図4】



【図6】

